

EVALUATION OF THE SOUTHERN PINE BEETLE INFESTATIONS
ON THE FRANCIS MARION NATIONAL FOREST S.C.

By

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INTRODUCTION

An aerial sketchmap and ground evaluation was conducted on the Witherbee and Wambaw Ranger Districts of the Francis Marion National Forest. This evaluation was performed by the Asheville Office of Forest Pest Management to determine the current status and trend of the southern pine beetle populations on the forest. The southern pine beetle infestations in this area are part of a Southwide outbreak involving 10 states. Southern pine beetle activity has caused sporadic problems on the Francis Marion during the past decade but has remained moderate to high since 1971.

METHODS

Standard aerial sketchmap and ground techniques were utilized during the current evaluation^{1/}. A 50-percent aerial sketchmap survey was conducted and 13 spots of dead and dying pines were checked on the ground to confirm the cause of mortality, the percent of spots containing active infestations, and to assess the general condition of the beetle population.

TECHNICAL INFORMATION

Insect - Southern pine beetle, *Dendroctonus frontalis*, Zimm.

Hosts - The southern pine beetle will attack all species of southern yellow pine. However, loblolly pine, *Pinus taeda*, L., and shortleaf pine, *P. echinata*, Mill., are the preferred hosts.

^{1/} Detection of Forest Pests in the Southeast, 1970, USDA, USFS, SA, S&PF, Div. of FPM, Pub. S&PF-7, Atlanta, Ga. 51 pp.

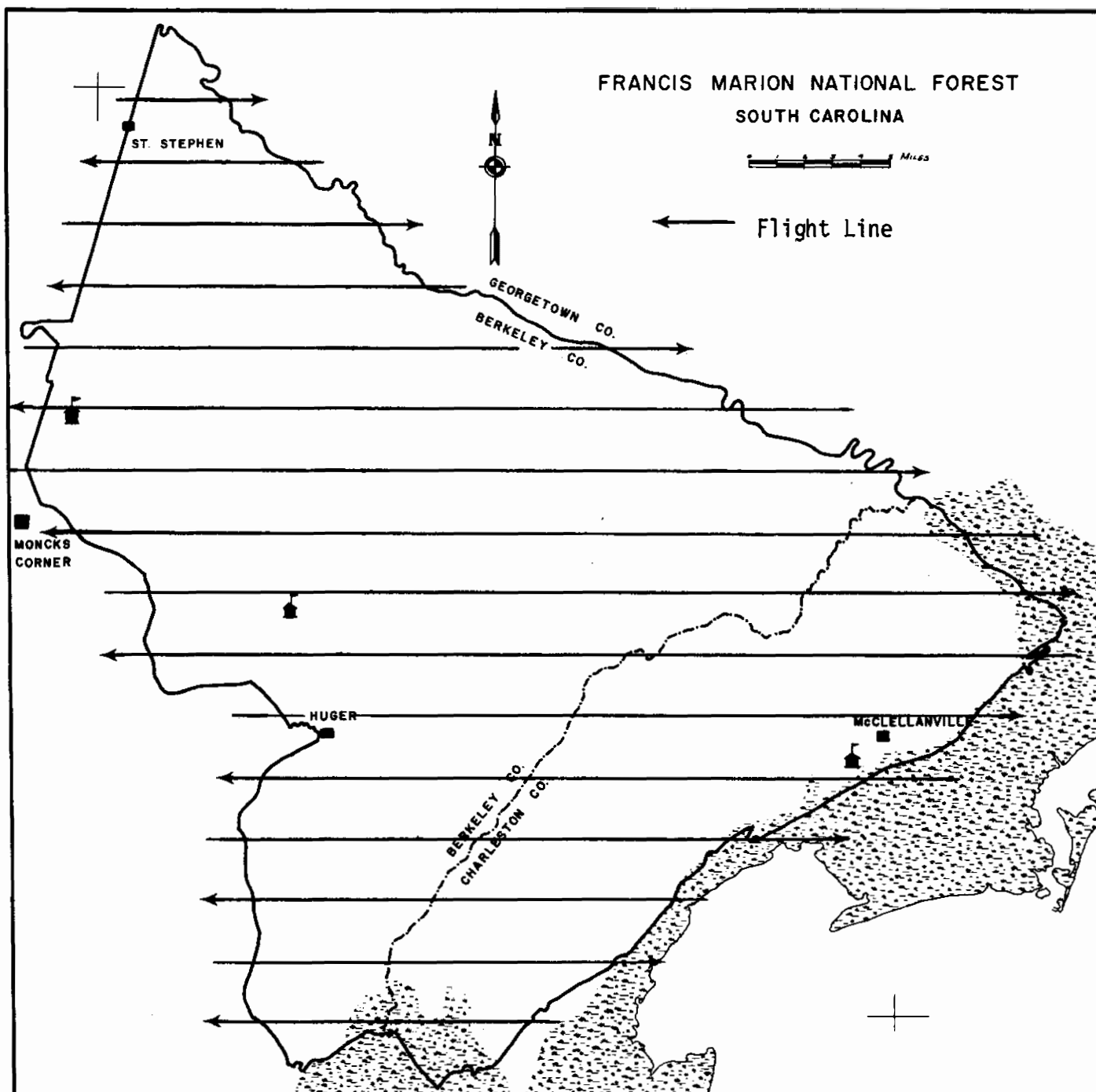


Figure 1. Aerial survey of August 28, 1974.

Type of damage - Death of the tree is the result of cambial mining by the southern pine beetle as it constructs its gallery. The beetle also introduces the blue stain fungi, *Ceratozystis* spp., which slows down or blocks conduction of water in the stem.

Life cycle of the beetle - The beetles attack in pairs and construct a winding gallery in the cambium. Eggs are deposited in niches along the sides of the galleries. The eggs hatch into whitish grubs that further mine the cambium and then construct cells in the bark for pupation. The callow adults then mine through the bark to emerge. The complete life cycle takes about a month during the summer and as many as seven generations may be produced in a year.

RESULTS AND DISCUSSION

The southern pine beetle population is presently at a very high level on the Francis Marion National Forest (Tables 1 and 2). Data from the current evaluation showed a dramatic increase in the beetle population since the July 1973 survey. There are currently 18,000 infested trees on the Forest compared to 584 found in July 1973. Also the average spot size is twelve times as large as found on the last evaluation. Results of this evaluation indicate a great potential for increased southern pine beetle activity on the Forest.

Both the Wambaw and Witherbee ranger districts are conducting an aggressive suppression program to reduce timber losses caused by the beetle. Since the beginning of Fiscal Year 1975 (July, August, and September), the Wambaw has removed 93,381 cubic feet of timber through commercial sales and the Witherbee has removed 41,192 cubic feet.

The Francis Marion National Forest is also attempting to reduce beetle activity through good silvicultural practices. Thinning of overstocked stands in this area has accounted for a drastic decline in the number of infestations in those stands.

RECOMMENDATIONS

It is recommended that the Francis Marion National Forest receive funds to continue its suppression program in those stands where resource values are highest.

Guidelines for suppression of the southern pine beetle are outlined in the 5250 section of the Forest Service Manual and the Project Control Plan.

Table 1. Summary of results of southern pine beetle evaluations conducted on the Wambaw and Witherbee Ranger Districts, Francis Marion National Forest, South Carolina, October 1974.

		Ownership Unit	
		Wambaw R. D.	Witherbee R. D.
1. Results compiled from data collected during the aerial phase of the evaluation:			
Survey type	Aerial sketchmap	Aerial sketchmap	
Date of aerial survey	9/28/74	9/28/74	
Total acreage surveyed.	191,933	222,786	
Total susceptible host type	95,966	111,343	
Total number of spots within the survey boundary.	160	290	
Spots per M acre of host type (trees)	1.7	2.6	
Average spot size (trees)	51	19	
Range of spot sizes (trees)	1 to 2,000	1 to 500	
2. Results compiled from data collected during the ground and aerial phases of the evaluation:			
Date of ground phase.	10/10/74	10/10/74	
Infested trees per M acre of host type.	100	83	
Total number of infested trees within the survey boundary . . .	9,626	9,176	
Ratio of green infested to total red and fading trees	1:1.5	1:0.86	
Brood density - insects per square foot of bark surface	--	--	
Total volume of recently killed trees	219,280 cu. ft.	191,040 cu. ft.	
Total volume salvaged in F. Y. 1974	157,600 cu. ft.	115,600 cu. ft.	

Table 2. Summary of Aerial Survey Data - Francis Marion National Forest, October 1974.

Administra- tive unit	Infestation Size (No. of Trees)										
	2-5		6-20		21-50		50+		Total		
	Singles	Spots	Trees	Spots	Trees	Spots	Trees	Spots	Trees	Spots	Trees
Witherbee ^{1/}	94	97	283	40	589	35	1,327	24	3,235	290	5,528
Wambaw ^{1/}	44	29	97	38	504	25	1,036	24	6,470	160	8,151
Total	138	126	380	78	1,093	60	2,363	48	9,705	450	13,679

^{1/} Corrected according to data by Aldrich et. al. (1958); expanded to a 100-percent survey area coverage.